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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/981,643	10/16/2001	Leo W.M. Lau	CUH-003.00	7018

7590

12/02/2003

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EXAMINER
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KOPPIKAR, VIVEK D

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 12/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/981,643

Applicant(s)

LAU ET AL.

Examiner

Vivek D Koppikar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 38,39 and 50 is/are allowed.
- 6) ☒ Claim(s) 1-37,40-49 and 51-55 is/are rejected.
- 7) ☒ Claim(s) 56-58 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**FINAL OFFICE ACTION**

***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-8, 10, 12-15 and 51-54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 1 appears incomplete in the absence of a substrate. If applicant intends a coating composition the claim should be so drafted. The examiner has taken the position that the coating is on a substrate. If the applicants intend to claim a coating composition then the preamble of the claim should recite "A decorative hard coating composition comprising... ."

3. Claims 1, 4-5, 9-37, 40-49, 51-52, 53, and 55 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. The term "metal-rich" renders these claims indefinite. In the specification the term "metal-rich" is mentioned only in Section [0013]. However the term is not defined anywhere in the specification. In the amendment filed on September 15, 2003 the applicants argue that the term "metal-rich" is well-known terminology in the art (9/15/03 Amendment , Page 16, Item V). However the examiner has not encountered this term in the prior art. Appropriate clarification of this term is required.

For examination purposes the term "metal-rich" will be interpreted as meaning the metal comprises 50% or more by weight of the composition or coating.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1 and 9-16 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent Number 4,714,660 to Gates.

With regard to Claims 1 and 16, Gates teaches hard coatings which are applied to substrates. One of these hard coatings is ZrAlOCN (Col. 12, Ln. 9-32).

With regard to Claim 9, in one embodiment of Gates there is an outer coating in addition to the first coating layer. The outer coating layer and the inner coating layer are both made of oxycarbonitrides in one embodiment of metals such as zirconium and aluminum (Col. 14, Ln. 6-17).

With regard to Claim 10, the ZrAlOCN hard coating in Gates has two distinct phases, therefore the coating has varying relative concentrations through the thickness of the coating (Col. 12, Ln. 20-25).

With regard to Claim 11, the ZrAlOCN coating overlies a ceramic (carbide) substrate (Col. 12, Ln. 9-10).

With regard to Claim 12, absent evidence of a difference in the coating, the process of its deposition is not seen to provide a patentable distinction. No difference is seen in the coating.

With regard to Claims 13 and 14, the thickness of the ZrAlOCN coating is 3 microns (Col. 12, Ln. 19-20).

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With regard to Claim 16, the coating in Gates is applied to a carbide substrate (Col. 3, Ln. 58-59).

6. Claim 18, 26, 28-32 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent Number 4,599,281 to Schintlmeister.

With regard to Claims 18, 26, 28-31, Schintlmeister teaches a coating consisting of a plurality of layers. The layers are made from oxycarbonitrides of several metals including aluminum and zirconium. Therefore, the examiner takes the position that Schintlmeister anticipates a decorative hard coating comprising an aluminum oxycarbonitride layer on a zirconium-rich oxycarbonitrides layer (Col. 11, Ln. 40-53).

With regard to Claim 32, the coating is between .1 to 1 microns thick (Col. 12, Ln. 14-16).

With regard to Claim 37, the coating is deposited on a substrate by deposition (Col. 3, Ln. 54-56).

7. Claim 22 is rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Number 08-003750 (hereafter referred to as JP'750).

JP'750 teaches a Al-Ti CNO layer overlying a stainless steel layer (Translated Abstract).

8. Claim 40-41, 43-46 and 48-49 is rejected under 35 U.S.C. 102(b) as being anticipated by US Patent Number 4,599,281 to Schintlmeister.

Schintlmeister teaches forming a coating on a substrate consisting of a plurality of layers. In one embodiment the layers are made from oxycarbonitrides of zirconium and aluminum. Therefore, the examiner takes the position that Schintlmeister anticipates forming a metal-rich (zirconium) oxycarbonitride layer over the substrate and then forming an aluminum

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oxycarbonitride layer over the zirconium oxycarbonitride layer. The coating is formed in an environment with nitrogen gas (PVD) (Col. 6, Ln. 60).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 17 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gates as applied to claims 1 and 16, respectively above.

Claim 17 is a use claim and it would have been obvious at the time of the invention to used the claimed coating in any of the recited venues to provide increased resistance to wear.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gates as applied to claim 1 above.

Gates does not teach a specific Vickers hardness for the coating. However the examiner takes the position that the coating of Gates has a Vickers hardness of between 10 and 60 GPa (Col. 4, Ln. 50-51) since both the coating of Gates and that of the instant invention have the same chemical composition as discussed above.

12. Claims 21 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schintlmesiter as applied to claims 18 and 27 above, and further in view of US Patent Number 4,731,302 to Weissmantel.

Schintlmeister does not teach a specific Vickers hardness for the coating. However Weissmantel teaches that a hard coating has a Vickers hardness of between 10 and 60 GPa (Col.

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4, Ln. 50-51). The examiner therefore takes the position that the coating in Schintlmeister has Vickers hardness in this range since it is also a hard coating.

13. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP'750 as applied to Claim 22 above, and in further view of US Patent Number 4,599,281 to Schintlmeister.

JP'750 does not teach an additional coating layer on the substrate in addition to the metal oxycarbonitride layer.

Schintlmeister teaches a coating which consists of a plurality of layers in order to increase resistance to wear (Col. 2, Ln. 29-31). At the time of the invention one of ordinary skill in the art would have been motivated to add an additional metal oxycarbonitride layer to the substrate in JP'750 with the expectation of increasing the wear resistance of the coating.

#### ***Response to Arguments***

14. The claim objection set forth in the Office Action dated March 14, 2003 over Claim 41 has been overcome in the amendment filed on September 15, 2003.

15. The 35 USC 112 rejection set forth in the Office Action dated March 14, 2003 over Claims 22-25 has been withdrawn in view of the amendment filed on September 15, 2003.

16. The 35 USC 102(b) rejection over Claim 38 as set forth in the Office Action dated March 14, 2003 has been withdrawn in view of the amendment filed on September 15, 2003. The arguments overcome the rejection.

17. The 35 USC 103(a) rejections over Claims 2-4, 19-20, 23-24, 27, 33, 34, and 36 set forth in the Office Action dated March 14, 2003 have been withdrawn in view of the amendment filed on September 15, 2003. The arguments overcome the rejection.



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18. Applicant's arguments filed September 15, 2003 with respect to the Gates, Schintlmeister, JP'750 and Nelson references have been fully considered but they are not persuasive. Since the arguments against each of these prior art references were set forth on a reference-by-reference basis rather than on a claim-by-claim basis the arguments will be addressed in this fashion.

With regard to the Gates reference, the applicants argue that Gates does not teach a coating for a non-cutting or non-tool application, the coating in Gates is not "metal-rich" and the applicants also claim the coating taught by Gates is not white.

The examiner takes the position that even though the coating in Gates is meant for a cutting or tool application, the claims as written do not require that the coating is used for a non-cutting or non-tool application. Moreover there is no teaching or suggestion in Gates that implies that the coating could not be used in a non-cutting or non-tool application.

The term "metal-rich" is indefinite as set forth above in the 35 USC 112 rejection and the examiner requests the applicants to amend or clarify this term. Finally, the claims as written do not contain the limitation, in the bodies of the claims, that the coating is white.

With regard to the Schintlmeister reference, the applicants argue that reference contains an aluminum-boron oxide layer. They also mention that the coating in Schintlmeister is formed by a CVD (chemical vapor deposition) process and that Schintlmeister does not mention that the coating is white.

The examiner takes the position that even though the layered coating of Schintlmeister may contain an aluminum-boron oxide layer the claim language that the applicants have used includes the term "comprising" which is an inclusive term. If applicants desire to claim a

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coating with only a certain number of desired compounds then the examiner suggests using the term “consisting of” or “consisting essentially of” in the preamble.

The examiner does not understand the relevance of the arguments regarding the temperature at which the coating is formed via a CVD process because the claims do not recite a temperature range. Finally, the claims do not contain a limitation, in the bodies of claims, that the coating is white.

With regard to the JP’750 reference, the applicants argue that JP’750 does not mention zirconium or a color. They also state that JP’750 does not teach a metal rich oxycarbonitride.

The examiner would like to point out that Claim 22 (Claim 22 was rejected over JP’750) as presently written does not require zirconium and does not contain a limitation specifying the color of the coating. Finally the term “metal-rich” has been rejected under 35 USC 112 above and the examiner requests the applicants to either clarify this term or amend the claim to remove this term.

It is further noted that JP’750 does contain a metal (titanium) oxycarbonitride layer (Translated Abstract). The substrate in JP’750 can be a metallic material which the examiner interprets as including metal oxycarbonitride (absent a showing of evidence to the contrary).

With regard to the Nelson reference, it is used to show that a coating can be applied via arc sputtering and there is motivation for doing so as discussed in the 35 USC 103 rejection above.

***Allowable Subject Matter***

19. Claims 38-39 and 50 are allowed over the prior art of record.

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20. Claims 56-58 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

21. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Vivek Koppikar** whose telephone number is **(703) 305-6618**. The examiner can normally be reached on Monday-Friday from 8 AM to 5 PM, Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones, can be reached at (703) 308-3822. The fax phone numbers for the organization where this application or proceeding are assigned are (703) 305-7718 for regular communications and (703) 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
Vivek Koppikar

11/25/03

  
DEBORAH JONES  
SUPERVISORY PATENT EXAMINER